

Previous class

TCSPs

Today

Probabilistic reasoning - fundamentals

CS 581

October 2, 2020

Friday ①

$P(2)$

↑

die roll

$\langle \frac{1}{6}, \frac{1}{6}, \frac{1}{6}, \frac{1}{6}, \frac{1}{6}, \frac{1}{6} \rangle$

vector

1 2 3 4 5 6

Odd :  $\langle \frac{1}{2}, \frac{1}{2} \rangle$

T F

LT ~~5~~ 1, 2, 3, 4

LT ~~5~~  $\langle \frac{4}{6}, \frac{2}{6} \rangle$

T F

$P( ) =$

$\begin{matrix} & a & b \\ \begin{matrix} \uparrow \\ \uparrow \\ \uparrow \\ \uparrow \end{matrix} & \begin{matrix} T \\ T \\ T \\ F \end{matrix} & \begin{matrix} T \\ F \\ F \\ F \end{matrix} \end{matrix}$

Coin-toss:  $\langle 0.5, 0.5 \rangle$

$\alpha \langle 0.2, 0.2 \rangle$

↓

a number,  
when multiplied  
makes the values  
add to one

0.4

$$= \frac{1}{0.2+0.2} = \frac{1}{0.4}$$

$\alpha = 2.5$

normalization

normalizing constant

$$\alpha < , , , >$$

$$\sum = 1$$

$$\alpha < 0.5, 0.5 >$$

$$\alpha < 5, 5 >$$

$$0.1 < 5, 5 > = < 0.5, 0.5 >$$

$$P(\text{get}) = 0.98$$

$$P(\text{get} | \text{tire flat}) = 0.01$$

evidence  
something that has happened  
(you observed)

$$P(\text{flu}) = 0.1$$

$$P(\text{flu} | \text{fever, cough}) = 0.3$$

